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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/986,631	11/09/2001	Moo-Jong Lim	8733.532.00	5940

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MCKENNA LONG & ALDRIDGE LLP
1900 K STREET, NW
WASHINGTON, DC 20006

EXAMINER

TRAN, HENRY N

ART UNIT

PAPER NUMBER

2674

DATE MAILED: 10/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/986,631

Applicant(s)

LIM ET AL.

Examiner

HENRY N. TRAN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-17 is/are allowed.
- 6) ☒ Claim(s) 1-11 and 18-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

This Application has been examined. The original claims 1-22 are pending. The examination results are as following.

Information Disclosure Statement

1. The examiner has considered the references listed in the information disclosure statement (IDS) filed 2/27/02 (Paper No. 5) (see the attached form PTO-1449).

Claim Rejections - 35 USC § 112

2. Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 20 rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. This claim is an omnibus type claim. The phrase "the time interval may be 0.5msec ~ 1msec" renders this claim indefinite. For the purpose of this Office action, the examiner assumes that the phrase is changed to -- the time interval is in the range of 0.5msec ~ 1msec --.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-5 and 8-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoshihara et al (U.S. Patent 6,115,016, hereinafter “Yoshihara”).

Regarding claims 1-5, Yoshihara teaches a field sequential liquid crystal display device, comprising: a liquid crystal panel 21 having an upper substrate 2, a lower substrate 4 and a liquid crystal layer 13 therebetween; a back light 22 composed of a LED array 7 composed of R G and B light sources, which are arranged serially and repeatedly at a down edge and directly under the liquid crystal panel, for sequentially driving using a time-division technique; and an image signal processor 31 (a control signal generating circuit and image memory 31); wherein, the liquid crystal layer device has Ferroelectric liquid crystal (FLC) mode, Optical Compensated Birefringent mode (which is Antiferroelectric liquid crystal mode); figures 2, 5 and 6; col. 2, lines 3-9, lines 45-54; col. 7, line 39-65; col. 8, line 6-16; and col. 10, lines 34-54. Claims 1-5 are therefore rejected.

Regarding claims 8-11, Yoshihara also teaches a method of color image display for a field sequential liquid crystal display device using a time-division driving, comprising the steps of: dividing a frame into four subframes, each subframe having a period of one-fourth of frame period; driving each of light sources Red, Green and Blue sequentially at a first, a second and a third subframe; driving a combination having up to three colors at the fourth subframe; driving the fourth subframe using one of the combinations of Red, Green and Blue light sources; wherein

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one frame period is 1/60 second (#16.6 ms); a lighting period of the light source at each subframe is shorter than 1/240 second; figure 4; col. 4, line 17 to col. 5, line 3, lines ; and col. 6, line 41 to col. 7, line 35. Claims 8-11 are therefore rejected.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshihara in view of Yoshida et al (U.S. Patent 5,796,378, hereinafter referred to as "Yoshida").

Yoshihara discloses: a time period, which is the "less" time period, between each sub-period in which the back light is off (Yoshihara say "the emission of the back light for all the colors is completed within the period of 1/240 seconds or less into which the display period of 1/60 seconds or less is divided", col. 5, lines 38-41) ; the back light array 7 having LED light sources arranged into a plurality of groups, each composes of R, G and B LEDs disposed in sequence as described in figure 2, col. 2, lines 50-59, for illuminating a plurality of scanning lines of pixels 40. However, Yoshihara does not teach the liquid crystal layer is divided into n numbers of driving areas depending on a degree of a resolution of the LCD device and a response time of the LC, the lighting time of the backlight is dependent on the degree of resolution of the LCD device and a response time of the LC, and the time interval is 0.5msec ~ 1msec. Yoshida a Birefringent control type LCD device having a plurality of display areas, each

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is defined by a scanning line 47 (a gate line) and data lines 49, for providing n numbers of driving areas (n is the number of the gate lines); which makes up the resolution of the LCD device; figures 2-3, col. 5, lines 1-16. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Yoshihara and Yoshida for producing the claimed invention because it would provide a LCD capable of providing bright color images without using a color filter; Yoshida, col. 1, lines 24-26. By this rationale, claims 18-22 are rejected.

8. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshihara in view of Onitsuka et al (U.S. Patent 5,808,597 hereinafter referred to as "Onitsuka").

Yoshihara teaches generally all except for the fourth light source which is within a color range from green to blue. Onitsuka teaches a back light LCD device using a plurality of light sources including a fourth light source 404 capable of issuing white light which is within a color range from Green to Blue; figure 6; col. 3, lines 23-28, and col. 5, lines 27-33. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teaching of using the fourth light source as taught by Onitsuka in the Yoshihara device because it is easily to arrange and effectively illuminating the LCD device using frame scanning; col. 1, lines 10-18. Claims 6 and 7 are dependent upon claim 1, and are therefore rejected on the same reasons set forth in claim 1, and by the reasons noted above.

Allowable Subject Matter

9. Claims 12-17 are allowed.

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Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. They are: Takabayashi (U.S. Patent 6,573,882), Johnson (U.S. Patent 6,608,614), Makino et al (U.S. Patent 6,570,554), and Hunter (U.S. Patent 5,359,345) disclosing LCD devices using back light control.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HENRY N. TRAN whose telephone number is (703) 308-8410. The examiner can normally be reached on Mon - Fri from 8:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, RICHARD A. HJERPE, can be reached at (703) 305-4709.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

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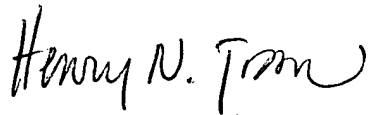
or faxed to:

(703) 872-9314 (for technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office Whose telephone number is (703) 306-0377.

A handwritten signature in black ink that reads "Henry N. Tran". The signature is written in a cursive style with a large, looping "H" and a trailing flourish.

HENRY N. TRAN
Examiner
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hnt
September 28, 2003